RELEASE ABATEMENT MEASURE PLAN/SELF-IMPLEMENTING DISPOSAL PLAN FOR REMEDIATION OF PCBS IN SOIL: ESTABROOK ELEMENTARY SCHOOL 117 GROVE STREET, LEXINGTON, MASSACHUSETTS RTN-3-29547

Prepared For:

Patrick Goddard
Director of Public Facilities
Town of Lexington
201 Bedford Street
Lexington, MA 02420

Prepared By:

Environmental Health & Engineering, Inc.
117 Fourth Avenue
Needham, MA 02494-2725

EH&E Project #17228

August 5, 2011

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LIST OF ABBREVIATIONS AND ACRONYMS

CAM	Compendium of Analytical Methods
CFR	Code of Federal Regulations
CMR	Code of Massachusetts Regulations
EH&E	Environmental Health & Engineering, Inc.
EPA	U.S. Environmental Protection Agency
HEPA	high efficiency particulate air
MADEP	Massachusetts Department of Environmental Protection
MCP	Massachusetts Contingency Plan
NESHAPs	National Emission Standards for Hazardous Air Pollutants
PCB	polychlorinated biphenyl
ppm	parts per million
RAM	Release Abatement Measure
RAO	Response Action Outcome
REDUA	Representativeness Evaluation and Data Usability Assessment
RTN	release tracking number
School	Estabrook Elementary School
Site	117 Grove Street in Lexington, Massachusetts
TSCA	Toxic Substances Control Act
$\mu g/m^3$	micrograms per cubic meter

1.0 INTRODUCTION

The objective of this document is to provide a combined Release Abatement Measure (RAM) Plan/Self Implementing Disposal Plan for the release of PCBs from caulking to soil at the Estabrook Elementary School located at 117 Grove Street in Lexington, Massachusetts (the Site). Figure B.1 in Appendix B illustrates the site location. This document includes discussion of activities already undertaken following the notification of the Massachusetts Department of Environmental Protection (MADEP) and U.S. Environmental Protection Agency (EPA) in addition to plans for the remediation of soils at the Site.

In response to sampling results, the Town of Lexington contracted Environmental Health & Engineering, Inc. (EH&E) to develop and submit an abatement protocol to address the presence of non-authorized PCBs in soil at the Site. This work plan was prepared to support an application for a Title 40 Code of Federal Regulations (CFR) performance-based disposal plan, as outlined at EPA 40 CFR 761.61(a) for disposal of soils impacted by non-liquid PCBs.

In addition, this RAM Plan has been prepared in accordance with the provisions of the Massachusetts Contingency Plan (MCP) at Title 310 Code of Massachusetts Regulations (CMR) Section 40.0444. This RAM Plan submittal is an integral part of, and is incorporated by reference to, the RAM Transmittal Form (BWSC-106) provided electronically through eDEP. This RAM Plan, the opinions stated herein, and its Appendices are subject to the complete *Limitations* that are provided in Appendix A, and are incorporated by reference into any Licensed Site Professional (LSP) Opinion to which the RAM Plan is attached.

The work will include the removal of the regulated soils associated with previously abated and regulated exterior building caulk. The soils will be disposed as PCB bulk remediation waste. The soil abatement will be performed to achieve criterion of 1 part per million (ppm) or less for unrestricted use and disposal in accordance with EPA regulations. This standard is more protective than the MCP Method 1 Soil Clean-up Standard of 2 ppm.

An historic release of PCBs to soil was discovered subsequent to an assessment of building materials that were found to contain regulated concentrations of PCBs under EPA regulations. MADEP was notified of the release on September 28, 2010, via a Release Notification Form. MADEP issued Release Tracking Number (RTN) 3-29547 for the Site.

Soil abatement is anticipated to be completed by late summer 2011, prior to the start of the fall 2011 school year. If abatement as specified by this RAM Plan is successful, it is anticipated that a RAM Completion Report/Response Action Outcome will be submitted prior to the one year deadline (September 28, 2011) for Tier Classification and the initiation of Comprehensive Response Actions under the MCP.

As required for submission of a RAM Plan, contact Information is provided:

Patrick Goddard
Director of Public Facilities
Town of Lexington
201 Bedford Street
Lexington, MA 02420
(781) 274-8958

2.0 BACKGROUND

The following sections describe relevant activities and response actions conducted previously at the School, including characterization of PCBs in building materials and soil adjacent to the building.

2.1 PCB-CONTAINING EXTERIOR BUILDING MATERIALS

In 2010, EH&E performed a series of investigations to identify suspect PCB-containing caulk and sealants used throughout portions of the School. EH&E collected samples in a manner to investigate the installation and application of caulk/sealant materials, including an evaluation of any evidence indicating window caulk/sealant replacement or repair work.

The analytical results indicated the presence of PCBs in select caulks/sealants present in the interior and exterior of the School. In response to the sampling results, a detailed and thorough abatement and encapsulation protocol was implemented at the School to address the presence of PCBs in building materials. The abatement work completed to date involved the removal or encapsulation, as appropriate, of the PCB caulks/sealants throughout the interior and exterior of the School. The abatement work included removal of approximately 550 linear feet of white PCB caulk around exterior windows. Work also included the cleaning of porous and non-porous materials that are in contact with the PCB caulking, followed by application of an encapsulant that was used to seal the residual PCBs within the porous substrates. Additional exterior encapsulation was conducted during the spring 2011.

2.2 PRELIMINARY SOIL SAMPLING RESULTS

A limited surficial soil sampling effort was conducted by EH&E on August 11, 2010, as described in the March 18, 2011, sampling plan (EH&E, 2011). This program included collection of four samples (plus a duplicate) around the section of the School containing Classrooms 1 – 6. Soils from three of the four locations detected PCB concentrations ranging from 0.12 – 0.14 ppm.

One sample collected outside Classroom 6 had a PCB concentration of 7.4 ppm (refer to Figure B.2, Appendix B). This concentration constitutes a reportable release under the MCP. Because this is a historic release of PCBs and did not exceed the 10 ppm threshold for classification as an Imminent Hazard as defined by the MCP, notification was required within a maximum of 120 days. EH&E on behalf of the Town of Lexington notified MADEP (via a Release Notification Form) of the release to soils on September 28, 2011, and MADEP assigned a RTN (3-29547) to the Site.

2.3 FENCING

Subsequent to the discovery of PCBs in soils at the School, fencing was installed around the building perimeter in all areas where PCB-containing caulk was installed on the building exterior. This fencing is located approximately 10 feet from the building wall except in areas bounded by sidewalk where the fence was installed closer to the building adjacent to the sidewalk. The purpose of this fencing is to minimize access to potentially impacted soils.

2.4 FOLLOW-UP SOIL SAMPLING RESULTS

A follow-up sampling program was implemented on June 13 and 14, 2011, and July 13 – 15, 2011 by EH&E to characterize the nature and extent of PCBs in soil and adjacent exterior building/landscaping materials at the Estabrook Elementary School. Soils may have been impacted by PCB-containing caulking and sealants in place throughout portions of the School. This soil sampling program was performed after the removal and encapsulation of PCB-containing caulk on the exterior of the building. Appendix D provides a description of soil sampling and analysis methods.

This soil sampling program was designed to provide a more detailed characterization of PCB-contaminated soils along the perimeter of the School in accordance with methodology outlined in 40 CFR 761. This program also supports compliance with the MCP (310 CMR 40). The soil sampling program was conducted in accordance with the plan dated March 18, 2011, (EH&E, 2011) and recommendations provided by the EPA after its review of the plan.

The soil sampling results characterized surficial soils with respect to potential PCB contamination through the collection of representative samples in close proximity (within approximately one foot) to the former locations of PCB-containing caulk lines around the perimeter of the School. In addition, a targeted sampling program was performed in landscaped areas where soils may have been disturbed at greater depths.

Sixty-four composite soil samples were collected along the perimeter of the school on June 13 and 14, 2011. Total PCB concentrations in soil were below the regulatory criterion of 1 ppm in 54 of the 64 samples. Refer to Table C.1 in Appendix C and Figure B.2 in Appendix B. Ten samples contained a total PCB concentration greater than the EPA criterion of 1 ppm total PCBs. PCB concentrations above the EPA criterion were found only in samples collected 0 – 3 inches below ground level. Two samples had a concentration above the MADEP Method 1 S1 soil clean-up standard of 2 ppm.

No sample had a concentration in excess of 10 ppm, a level that constitutes an Imminent Hazard under the MCP. All samples were collected within the restricted area bounded by fencing.

Based upon these and previous results of testing at the school, EH&E recommended focused additional testing to further define the extent of contamination at the regulated locations. This sampling was conducted on July 13 – 15, 2011. During the follow-up testing, EH&E collected samples from 3 – 6 inches below ground surface at seven locations where previous results exceeded 1 ppm and deeper samples were not collected. In addition, EH&E also collected samples in the same areas where previous exceedances occurred, but further (approximately 4 feet) from the building to evaluate lateral extent of contamination. Sample locations are illustrated in Figure B.2 and results are summarized in Table C.2.

For both rounds of testing, the samples were collected as composites over a 10 foot length of the building in areas where regulated PCB-containing caulk was present. Results generally indicate that soils concentrations are below 1 ppm at a distance of four feet from the building perimeter, and at depths below 3 inches. Slight exceedances of the 1 ppm criterion were observed at two locations S22B and SF33.

Therefore, it is recommended that soils be excavated and disposed off-site in all areas exhibiting concentrations greater than 1 ppm total PCBs. In most affected areas this will require removal of soils a minimum of 6 inches deep and to a lateral distance of four feet from the building as illustrated in Figure B.2. At location S22B it is recommended that soils be removed to a depth of at least 9 inches and at SF33 removal will be completed to a depth of at least 6 inches and a lateral distance of 6 feet from the building. Removal will be conducted over the entire 10 foot grid opening represented by each sample.

At all locations, confirmatory sampling and analysis will be utilized to ensure complete removal of regulated soils.

2.5 CHARACTERIZATION OF EXTERIOR CONCRETE AND LANDSCAPING MATERIALS

In addition to follow-up soil sampling, EH&E also collected samples of exterior building materials adjacent to soils with concentrations exceeding 1 ppm total PCBs. On July 15, 2011, EH&E collected 11 samples of concrete and landscaping materials for analysis of PCBs via EPA Method 8082 with Soxhlet extraction. These samples included slate pavers, mortar, and concrete from air intakes and other structures located adjacent to impacted soils. Sample locations are included on Figure B.2; sample descriptions and analytical results are included in Table C.3.

Concentrations of PCBs were not detected at concentrations above 1 ppm at any of the locations tested. Therefore, no further action is recommended for these materials.

3.0 SITE CONCEPTUAL MODEL

The Site is currently used as an elementary school by the Town of Lexington. The building is scheduled for full demolition with the planned construction of a new school in 2014 or 2015 depending upon construction schedule. At that time, all remaining source building materials will be fully abated in accordance with federal and state regulations. For the interim, the Town has implemented selective removal and stabilization of remaining source materials to minimize exposures to site occupants and potential releases to the environment.

3.1 RELEASE HISTORY

PCBs were detected in soil at regulated concentrations in the fall of 2010. The source of these PCBs is interpreted to be PCB-containing caulk used around exterior windows and panels that are original to the building, which was constructed in 1961. Concentrations are within the range of concentrations typically observed at similar sites, and are likely due to long-term weathering effects that would generate run-off from the building exterior and general degradation of the caulk over time. Caulk debris was not observed at the time of soil sampling.

3.2 SITE RECEPTORS

Human receptors at the school include staff, students, contractors, and visitors. The playgrounds at the Site are open and accessible year-round, but the extent of identified soil impacts does not extend into the playground areas. Fencing currently encompasses all identified impacted soils. According to school representative, soils located adjacent to the building and PCB source materials have been relatively undisturbed over time. In particular, soils from these areas have not been removed or redistributed to other portions of the property.

A community garden and green house are present at the property. The garden area comprises raised beds and according to school staff, all soils for garden and greenhouse originated off-site and, therefore, are not anticipated to be impacted by PCB sources at

the school. Based upon this information, it was interpreted that testing of these areas was not necessary.

No surface water bodies or wetlands are located in proximity to the impacted soils, nor are catch basins or dry wells present in impacted areas.

3.3 SOILS DESCRIPTION

The following section provides a description of soils observed at the sample locations. Soils were classified using a modified Burmister Soil Classification System.

At several of the soil sampling locations the top 3 inches were covered by bark mulch. In these instances the bark mulch was scraped away from the soil surface and sampling to depths began. With the exception of sample locations S23 and S34, soil at the Site in the range of 0 – 9 inches below ground surface was characterized as dark brown silt with some fine brown sand and trace medium sand. At some locations trace amounts of glass fragments were noted. At sample location S23, soils were characterized as fine brown sand, with some fine brown silt and medium brown sand. At sample location S34 the soil from 0 – 3 inches was noted as dark brown silt with some fine brown sand and trace medium sand; however, from 3 – 9 inches soil characterization graded to a fine gravel with some loose sand and little clay.

4.0 REMEDIATION PLAN

The objective of site remediation is to remove and properly dispose off-site all soils with PCB concentrations exceeding 1 ppm. This effort would meet clean-up standards promulgated by EPA under 40 CFR 761 and MADEP under the MCP for unrestricted reuse of soils at the Site. The following sections of this plan describe the methods that will be used to conduct the remediation and testing requirements to ensure that clean-up objectives are achieved.

4.1 REMOVAL

The removal activities shall be performed by the Remediation Contractor/Town of Lexington Staff using appropriately trained and qualified personnel in accordance with all applicable federal, state, and local regulatory requirements. This effort will include removal of a minimum of six inches of underlying soil in addition to removal of any overlying turf or mulch. Removal at S22B will be to a depth of 9 inches. Figure B.2 illustrates the removal areas. The removal work will be performed by the Remediation Contractor/Town of Lexington Staff under the direction of EH&E as detailed in the following sections of this work plan.

The removal will be performed in the following manner with oversight by EH&E:

- Clean-up of visible caulking debris (if present) on exposed soil and grass/turf covered areas shall be initially performed by hand, or high efficiency particulate air (HEPA) filtered vacuum prior to soil removal. These materials will be placed in containers and segregated from other waste streams. These materials will be disposed as PCB bulk product waste.

- Caulking debris will be misted with water prior to and during removal and loading activities to suppress the release of dust related to the activities.

- Following removal of visible caulking debris, the surface soil/turf within the demarcated areas will be removed to an approximate depth of six inches below any turf or mulch that may be present.

- A backhoe will be used for removal of soils as PCB Remediation Waste. Hand tools may also be used if access is restricted or in very close proximity to the building.

- All soil removal shall be performed using wet methods to minimize the release of airborne dust and visible emissions in accordance with the EPA National Emissions Standard for Hazardous Air Pollutants (NESHAPs) regulations.

- The area shall be initially misted with water until the soil is slightly damp, but not saturated. The soil shall then be misted again during handling, and prior to transport to the waste container for disposal purposes.

- The removed soil will be placed into a suitable container located contiguous to the work area and lined with two 10-mil poly liners. These containers will be suitable for transportation of the material. The removed soil will not be reloaded for off-site disposal.

- The containers of removed soil will be covered on a daily basis and prior to transportation.

- Any requested changes or modifications to the work methods and procedures will be provided to EH&E for review.

- Small containers will be decontaminated prior to shipment; larger containers will be protected with poly during loading to prevent contamination with excavated soils.

4.2 REGULATING THE WORK AREA

The areas designated for removal shall be demarcated and cordoned off using red "danger" tape affixed with appropriate hazard warning signs in accordance with U.S. Occupational Safety and Health Administration (OSHA) 29 CFR 1926.1101(e)(2). The warning signs will be posted every twenty feet to ensure that the work area is sufficiently demarcated. Regulating the work area shall be performed by the Remediation Contractor/Town of Lexington prior to any clean-up or soil removal activity. Due to the use of mechanical equipment, the barriers may temporarily be removed to provide access for the removal of soil and turf. In such cases, a watch person designated by the Remediation Contractor/Town of Lexington shall be responsible for overseeing the

security of the work area and preventing access to the work space by any surrounding unauthorized workers or unauthorized personnel.

Areas where mechanical equipment may be used for transport of PCB remediation waste to the on-site waste container shall be regulated, demarcated or restricted using the designated watch person. The on-site waste disposal container shall also be secured/regulated using “danger” tape in conjunction with affixing weather resistant warning signs to each side of the waste container.

The contractor will construct and maintain an equipment decontamination area that will have the capacity to accommodate decontamination of the backhoe. All liquids generated by the decontamination process will be containerized, sampled and analyzed for PCB content to ensure proper disposal.

4.3 WORKER PROTECTION AND GENERAL REQUIREMENTS

The level of personal protective equipment shall be determined by the Remediation Contractor/Town of Lexington in accordance with federal and/or state requirements. At a minimum, each worker performing removal activities inside of the demarcated/regulated work area shall be equipped with impervious protective clothing (coveralls, gloves, and boots), half face respiratory protection with P-100 filter and organic vapor cartridges, protective eyewear, and protective headwear as determined by the Remediation Contractor/Town of Lexington.

The Remediation Contractor/Town of Lexington shall also construct, at a minimum, a decontamination area for workers to don personal protective equipment, and to change into or out of street clothing. Workers performing clean-up activities shall be restricted to the regulated work space until decontamination of protective clothing is performed, or required, to ensure prevention of cross contamination of adjacent spaces.

4.4 AIR MONITORING DURING ABATEMENT

EH&E will perform ambient work area sampling and testing for airborne particulates during removal activities. Air samples will be collected using real-time instrumentation to

measure airborne dust levels at the perimeter of the work area. These measurements will be compared to background dust levels collected at the remote control location upwind of the remediation activity. Direct reading instruments that continuously measure and log dust concentrations will be used to provide a real-time proxy of the effectiveness of control measures and potential PCB concentrations. During abatement a minimum of one upwind and two downwind stations will be deployed.

EH&E will use a one-hour average concentration of 150 micrograms per cubic meter ($\mu g/m^3$) for PM_{10} (based upon the National Ambient Air Quality Standards [NAAQS]) as an action level for notification to the Remediation Contractor/Town of Lexington. This action level is the observed concentration above background as measured at the remote upwind location. If dust levels outside of the remediation area exceed action levels for more than one hour, the remediation work will be temporarily suspended until evaluation of dust suppression strategies, or the ambient environment has been performed.

Air sampling will be performed and evaluated by EH&E. Real-time, data-logging aerosol monitors will collect and record data for total airborne dust concentrations during the abatement work. A DustTrak™, manufactured by TSI Instruments (St. Paul, Minnesota) or equivalent will be used to conduct the monitoring. The DustTrak™ instrument measures airborne dust concentrations with an accuracy of one percent and a resolution of 1 $\mu g/m^3$, using a forward light scattering laser diode. The monitoring range of the DustTrak™ Model 8520 is 0.001 – 100 milligrams per cubic meters (mg/m^3). The unit is factory calibrated annually.

4.5 CLEARANCE REQUIREMENTS

Following removal of soil inside of the demarcated areas, EH&E will conduct a visual inspection of the excavation to ensure that all visible debris has been removed and specified depths have been reached.

EH&E will then collect confirmatory soil samples from the edges and bottom of the excavation in compliance with EPA 40 CFR 761, Subpart O and the MCP. This will include composite samples collected over a maximum grid spacing of approximately 5 feet or 1.5 meters. These soils samples will be analyzed via EPA Method 8082 with

Soxhlet extraction, and in accordance with quality assurance/quality control (QA/QC) requirements specified in section 5. For any area that does not meet the 1 ppm total PCB clean-up criterion, additional excavation followed by additional confirmatory analysis will be required until the observed concentration in the remaining soil does not exceed 1 ppm total PCBs.

4.6 WASTE HANDLING AND DISPOSAL

It is currently estimated that approximately 30 cubic yards of soil and turf is to be removed. Excavated material shall be transported in the most direct route to the on-site waste container for disposal purposes. The Remediation Contractor/Town of Lexington shall maintain responsibility for providing the appropriate waste containers suitable for loading, temporary storage, transport, and unloading of contaminated waste without risk of ripping, rupture or exposure to persons, or emissions to the atmosphere. Transportation methods shall comply with the provision of EPA 40 CFR 61, Subpart M, and with any and all state and local hazardous special waste requirements. Truck or trailer liners shall be two layers of polyethylene or equivalent with a thickness of at least 10 mil for all applications. Trucks will be placarded in accordance with all applicable regulations for transport.

Disposal of all waste shall be in accordance with applicable state and federal regulations and sent to a licensed facility that will receive and retain PCB bulk product waste and PCB remediation waste, in accordance with EPA regulations under 40 CFR 761.61 and 40 CFR 761.62. All PCB bulk product waste and PCB remediation waste removed from the site will be kept separate from other ordinary waste streams that may be generated. Copies of all bills of lading, waste shipment records, certificates of disposal, and any other documentation must be provided to the Town of Lexington as proof of proper disposal of waste. Furthermore, copies of all manifests shall be provided to the EPA as part of the final summary report. Waste will be managed in full compliance with MCP bill of lading requirements.

PCB bulk product and PCB remediation wastes will be stored according to applicable EPA regulations. The contractor shall ensure compliance with storage and marking requirements described in 40 CFR 761.40 and 40 CFR 761.65. The contractor shall also

ensure that no visible emissions of dust will occur during the disposal of PCB bulk product and PCB remediation wastes into appropriate disposal containers.

The PCB bulk product waste and PCB remediation waste shall be disposed of in accordance with 40 CFR 761.62 and 40 CFR 761.61(a), respectively, at an approved landfill for such disposal. The contractor shall submit the name of the landfill(s) with appropriate documentation to verify that it is capable of accepting PCB waste in accordance with these requirements. Because concentrations in the soil are less than 50 ppm, the preferred choice for disposal will be a Resource Conservation and Recovery Act (RCRA) Title D landfill that is licensed to accept soil with less than 50 ppm total PCBs.

If PCB waste requires TCLP analysis prior to disposal, as required by the disposal facility, sampling and analysis will generally be conducted by EH&E in compliance with Subpart R of the TSCA regulations, or at equivalent frequencies.

4.7 PERSONNEL REQUIREMENTS

At a minimum, personnel conducting and overseeing removal activities will have Hazardous Waste Operations and Emergency Response (HAZWOPER) 40-hour training and current 8-hour refresher training as needed. In addition, HAZWOPER Supervisory training is required for at least one on-site removal worker.

Workers using heavy equipment (excavators) will be properly licensed/certified to operate such equipment.

Workers will participate in an appropriate health monitoring program in full compliance with all applicable regulations.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

This section describes the quality assurance (QA) objectives, measurement criteria, and performance criteria that were employed for the prior sampling program and will be implemented for confirmatory sampling as well. The selected analytical test methods for this project had laboratory quantification limits that are lower than the established project action limits. Project action limits were set to comply with the more conservative of the MCP and EPA regulatory criteria required for cleanup.

The ultimate objective of this project is to characterize the concentrations of PCBs in soil. The data collected must be of sound quality to support a determination of which soils must be removed from the Site based upon EPA and MADEP cleanup standards.

The ability of the data to meet the project quality objectives was measured using data quality criteria, which include precision, accuracy, representativeness, comparability, completeness, and sensitivity parameters. Laboratory and field sampling activity documentation was used to assess these parameters. In addition, a certified laboratory was used to ensure proper data handling techniques. The acceptance criteria and frequency of measurement of these parameters are summarized in Table 5.1.

Table 5.1 Quality Assurance and Quality Control (QC) Parameter

Data Quality Indicators	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	Frequency
Soil Samples			
Precision—overall	±45%	Field duplicates	Minimum: One per group or 10% of samples
Precision—laboratory	±45%	1. Matrix spike 2. Matrix spike duplicates	Minimum: One per analysis
Accuracy/bias	±45%	1. Matrix spike 2. Matrix spike duplicates	Minimum: One per group or 10% of samples
Accuracy/bias	Acceptable QC range based on analytical technique	Laboratory control samples (LCS)	Double column gas chromatograph (GC) Surrogate compound
Comparability	Not applicable	Comparability check	Double column GC
Data completeness	90% Overall	Data completeness check	
Sensitivity	±100%	1. Laboratory fortified blank 2. Low calibration standard	Minimum: One per group or 10% of samples

5.1 PRECISION

Precision is the degree of agreement among repeated measurements of the same characteristic under the same or similar conditions. In general, EH&E collected one duplicate sample for every ten samples collected or 10% of the sample size. No less than one duplicate set was collected, regardless of the sample size. The identity of the duplicate sample(s) was not revealed to the analytical laboratory. The target precision among field duplicates is ±45%, indicating good reproducibility. During the soil sampling programs this criterion was met for 6 of 9 duplicate sample pairs. Soil samples often have significant variability due to the heterogeneous nature of the sample matrix. Therefore, precision levels greater than 45% did not invalidate the sample data set, but were flagged in Table C.1.

5.2 ACCURACY

Accuracy is the extent of agreement between an observed value (sample result) and the accepted or true value of the parameter being measured. EH&E observes proper handling and packaging techniques to preserve the integrity of the samples. The appropriate laboratory QC program and analytical method determine acceptable recoveries. The laboratory utilized spiked samples, reference standards, and blanks to assure accuracy. Recoveries outside the acceptable limits did not invalidate the sample data set; however, the matrix spike data were flagged in Tables 3.2 and 3.3. The laboratory reported recoveries exceeding the recommended range for some of these samples. This is likely due to matrix interferences caused by the presence of multiple Aroclors in the sample matrix that co-elute with the analyte spiked into the sample. The results indicate the potential for a positive bias, which could lead to identification of samples having a concentration greater than 1 ppm when the actual concentration is below 1 ppm.

Table 5.2 Matrix Spike and Matrix Spike Duplicate Bulk Sample Results from Estabrook School, 117 Grove Street, Lexington, Massachusetts, June 13 and 14, 2011

Sample ID	Map Location	Aroclor 1016[1]		Aroclor 1260[1]	
		Matrix Spike Recovery	Matrix Spike Duplicate Recovery	Matrix Spike Recovery	Matrix Spike Duplicate Recovery
124583	S1	95%	111%	111%	136%
124586	S2	182% [m]	199% [m]	125%	140%
124589	S3	125%	109%	101%	100%
124592	S4	105%	110%	96%	99%
124613	S22	318% [m]	286% [m]	177% [m]	159% [m]
124616	S23	310% [m]	301% [m]	176% [m]	173% [m]
124619	S25	381% [m]	348% [m]	217% [m]	200% [m]

[1] PCB concentration analysis performed by Groundwater Analytical, Inc., using U.S. Environmental Protection Agency (EPA) Method 8082 (GC/ECD).

[m] Recovery outside recommended limits due to sample matrix interference

Table 5.3 Matrix Spike and Matrix Spike Duplicate Bulk Sample Results from Estabrook School, 117 Grove Street, Lexington, Massachusetts, July 13, 2011

Sample ID	Map Location	Aroclor 1016[1]		Aroclor 1260[1]	
		Matrix Spike Recovery	Matrix Spike Duplicate Recovery	Matrix Spike Recovery	Matrix Spike Duplicate Recovery
125384/125385	S22	210% [s]	147% [s]	248% [s]	157% [s]
125394/125395	SF53	120% [q]	137% [q]	101% [q]	119% [q]

[1] PCB concentration analysis performed by Groundwater Analytical, Inc., using U.S. Environmental Protection Agency (EPA) Method 8082 (GC/ECD).

[q] Recovery outside recommended limits

[s] Recovery outside recommended limits due to high concentration of analyte native to sample

Surrogate recoveries were within the accepted range for all but two samples. S53 had no reportable surrogate recoveries due to dilution; S42 had surrogate recoveries outside the recommended limits due to matrix interferences.

5.3 REPRESENTATIVENESS

Representativeness is a qualitative term that describes the extent to which a sampling design adequately reflects the environmental conditions of a site temporally and spatially based upon the Conceptual Site Model. EH&E considered the site's historical use,

hydrogeological and physical characteristics, and field observations in addition to analytical data to develop the phased sampling programs implemented.

The sample locations were selected to represent the various field conditions and the types of areas that may require remediation. In particular, EH&E targeted worst-case locations under the drip line of the building beneath PCB-containing caulk. Per direction from EPA, sample frequency significantly exceeded the requirements of 40 CFR 761 Subpart N, which typically requires one sample per 100 square feet. The follow-up sampling programs included one composite sample per approximately every 10 – 20 square feet as requested by EPA representatives.

Sample locations were chosen both inside and outside areas suspected to be impacted by PCBs to assist in delineating the extent of impacts. The media sampled, sample locations (both spatially and vertically), the density of the sample locations, and sample handling (including sample compositing), are judged appropriate to characterize the concentrations of PCBs in media at the site.

No temporal sampling was judged to be necessary because site conditions are not expected to affect PCB concentrations due to temporal factors such as seasonal effects.

No inconsistent information was observed during the work described herein or the data developed from it. No sources of uncertainty have been identified based upon review of the data with the exception of:

1) The additional sampling planned at locations S22B and SF33 to confirm sufficient removal of PCB-contaminated soil to depth; and
2) The additional sampling planned following soil removal to confirm that the cleanup criterion has been achieved at all locations.

No information or data collected during the work described herein has been judged to be unrepresentative of site conditions.

5.4 REASONABLENESS

All data were evaluated for reasonableness based on existing knowledge of the Aroclor mixtures in the building environment and on pre-abatement levels. In addition, levels published in the scientific literature were consulted to evaluate the data. Observed concentrations were within ranges observed at other sites in similar settings.

5.5 COMPLETENESS

Completeness is a measure (percentage) of the amount of valid data obtained that meet the data quality objectives. Valid data are results that are soundly founded as evidenced by the data quality indicators. The acceptable completeness percentage for this project is 90%. Although, some matrix interference and dilution effects impacted a portion of the sample set, all values were utilized based upon the multiple QA/QC criteria applied to the results, and the use of the data for characterization of the soils at the Site.

5.6 REPRESENTATIVE EVALUATION AND DATA USABILITY ASSESSMENT

A Representativeness Evaluation and Data Usability Assessment (REDUA) is required in accordance with the MCP (310 CMR 40.1056 (2)(k)) and MCP Policy #WSC-07-350 to support the data ultimately relied upon when a Response Action Outcome (RAO) Statement is filed for the Site. Accordingly, a REDUA will be prepared and filed with the documents supporting the RAO, which is anticipated to be submitted on or before September 28, 2011.

It is anticipated that the data described in this document will be used to support the RAO ultimately filed for this site. Therefore, the data from these sampling programs have been reviewed in accordance with the MCP and WSC-07-350, including an Analytical and Field Data Usability Assessment. All data were judged to be acceptable as reported. The laboratory data reports indicate that all data are Compendium of Analytical Methods (CAM) Compliant and have met the requirements for Presumptive Certainty. In some cases, quality control performance standards were not met by the analytical laboratory. Upon review of the non-conformances and analytical issues reported by the analytical laboratory in the Project Narratives for each sampling event, it is EH&E's opinion that

these exceptions do not place any limitations on the use of the data as reported. Accordingly, no data qualification actions were judged to be necessary. The data have been judged to be scientifically valid and defensible, and of sufficient precision, accuracy, representativeness, comparability, completeness, and sensitivity to support the opinions and plans presented in this document.

6.0 REFERENCES

EH&E. 2010. *Project Update, Estabrook Elementary School, Lexington, Massachusetts*. Needham, MA: Environmental Health & Engineering, Inc. Dated September 1, 2010.

EH&E. 2011. *Estabrook Elementary School, Lexington, Massachusetts, Sampling Plan for the Characterization of Soils Potentially Contaminated with Building-Related Polychlorinated Biphenyls*. Needham, MA: Environmental Health & Engineering, Inc. Dated April 15, 2011.

EPA 40 CFR 761. Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions. *Code of Federal Regulations.* Title 40, Part 761. Washington, DC: U.S. Environmental Protection Agency.

MADEP. 310 CMR 40.0000. Massachusetts Contingency Plan. *Code of Massachusetts Regulations.* Title 310 Section 40.0330. Boston, MA: Massachusetts Department of Environmental Protection.

MADEP. 310 CMR 40.0330. Notification Requirements and Procedures, Massachusetts Contingency Plan. *Code of Massachusetts Regulations.* Title 310 Section 40.0330. Boston, MA: Massachusetts Department of Environmental Protection.

APPENDIX A

LIMITATIONS

LIMITATIONS

1. Environmental Health & Engineering, Inc.'s (EH&E) assessment described in the attached report number 17228, *Release Abatement Measure Plan/Performance-Based Disposal Plan For Remediation of PCBs In Soil: Estabrook Elementary School, 117 Grove Street, Lexington, Massachusetts, RTN-3-29547* (hereafter "the Report"), was performed in accordance with generally accepted practices employed by other consultants undertaking similar studies at the same time and in the same geographical area; and EH&E observed that degree of care and skill generally exercised by such other consultants under similar circumstances and conditions. The observations described in the Report were made under the conditions stated therein. The conclusions presented in the Report were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of described services.

2. Observations were made of the site as indicated within the Report. Where access to portions of the site was unavailable or limited, EH&E renders no opinion as to the condition of that portion of the site.

3. The observations and recommendations contained in the Report are based on limited environmental sampling and visual observation, and were arrived at in accordance with generally accepted standards of industrial hygiene practice. The sampling and observations conducted at the site were limited in scope and, therefore, cannot be considered representative of areas not sampled or observed.

4. When an outside laboratory conducted sample analyses, EH&E relied upon the data provided and did not conduct an independent evaluation of the reliability of these data.

5. The purpose of the Report was to assess the characteristics of the subject site as stated within the Report. No specific attempt was made to verify compliance by any party with all federal, state, or local laws and regulations.

APPENDIX B

FIGURES

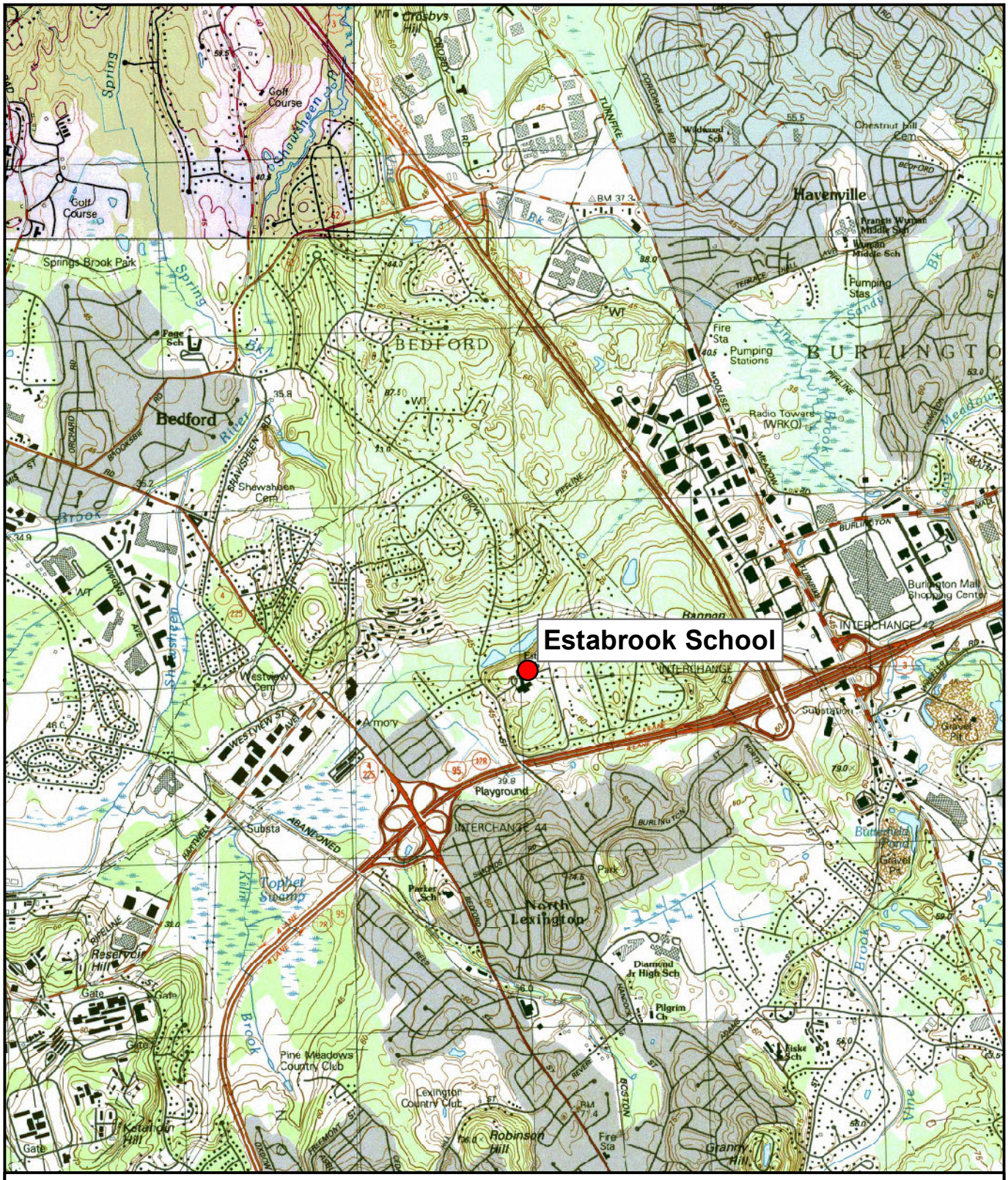


Figure B.1 - Site Locus Map

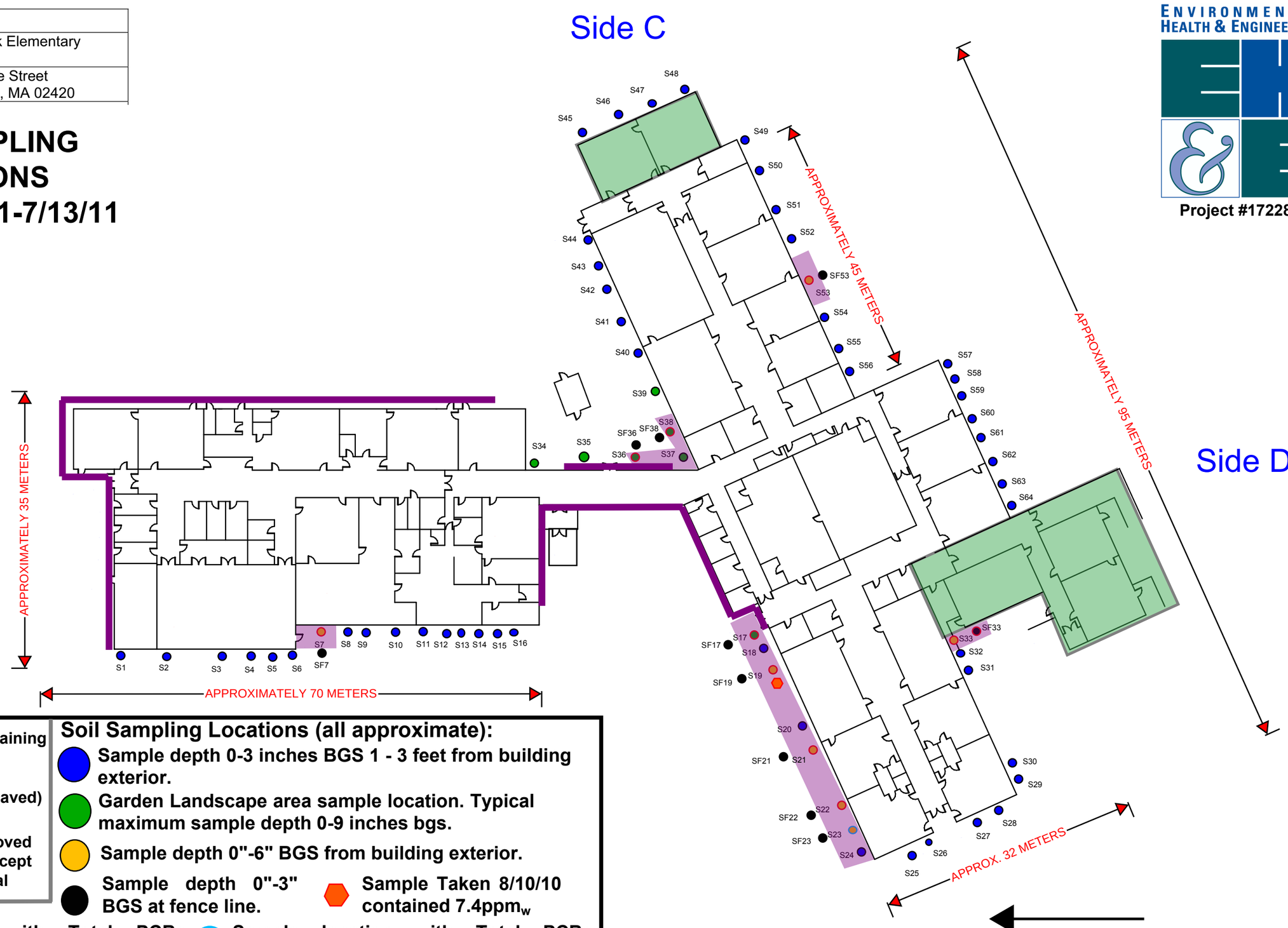
Estabrook School
Lexington, MA

District:	Lexington
School Name:	Estabrook Elementary School
Address:	117 Grove Street Lexington, MA 02420

SOIL SAMPLING LOCATIONS 6/13/11-6/14/11-7/13/11

ENVIRONMENTAL HEALTH & ENGINEERING

Project #17228



No PCB-containing caulking present

No soil present (paved)

Soil must be removed 6" in depth. Except S22 B - 9" removal

Soil Sampling Locations (all approximate):

- **Sample depth 0-3 inches BGS 1 - 3 feet from building exterior.**
- **Garden Landscape area sample location. Typical maximum sample depth 0-9 inches bgs.**
- **Sample depth 0"-6" BGS from building exterior.**
- **Sample depth 0"-3" BGS at fence line.**
- **Sample Taken 8/10/10 contained 7.4ppm$_w$**
- **Sample location with Total PCBs detected above 1 ppm at 3 inches depth.**
- **Sample location with Total PCBs detected above 1 ppm at 6 inches depth.**

Building Footprint

APPENDIX C

TABLES

TABLES

Table C.1 Bulk Sample Results for Polychlorinated Biphenyls from Estabrook School, 117 Grove Street, Lexington, Massachusetts, June 13 and 14, 2011

Sample ID	Map Location	Sample Depth	Sample Type	Aroclor 1248*		Aroclor 1254*		Aroclor 1260*		Total PCB Concentration* (ppm_w)
				Concentration (ppm_w)	Notes	Concentration (ppm_w)	Notes	Concentration (ppm_w)	Notes	
124581	S1	0-3”	S	BRL <.05	–	0.30	2C(0.29)	0.23	2C(0.17)	0.53**
124582	S1	0-3”	D	BRL <.05	–	0.50	1C(0.47)	0.36	2C(0.28)	0.86**
124584	S2	0-3”	S	0.30	2C(0.24)	0.17	2C(0.14)	BRL <.05	–	0.47
124585	S2	0-3”	D	0.23	1C(0.21)	0.25	1C(0.19)	BRL <.04	–	0.48
124587	S3	0-3”	S	BRL <.05	–	0.17	1C(0.13)	0.11	2C(0.07)	0.28
124588	S3	0-3”	D	BRL <.05	–	0.21	1C(0.18)	0.13	2C(0.09)	0.34
124590	S4	0-3”	S	BRL <.05	–	0.10	1C(0.06)	0.05	2C(0.03)	0.14
124591	S4	0-3”	D	BRL <.04	–	0.08	1C(0.08)	0.06	2C(0.03)	0.14
124593	S5	0-3”	S	BRL <.04	–	0.26	2C(0.25)	0.18	2C(0.10)	0.44
124594	S6	0-3”	S	BRL <.05	–	0.09	1C(0.08)	0.06	2C(0.05)	0.15
124595	S7	0-3”	S	BRL <.21	–	0.64	2C(0.64)	0.44	2C(0.24)	**1.1**
124596	S8	0-3”	S	BRL <.04	–	0.16	1C(0.14)	0.10	2C(0.05)	0.26
124597	S9	0-3”	S	0.51	1C(0.38)	0.15	2C(0.12)	BRL <.04	–	0.66
124598	S10	0-3”	S	BRL <.04	–	0.07	1C(0.05)	BRL <.04	–	0.07
124599	S11	0-3”	S	BRL <.04	–	0.16	1C(0.13)	0.08	2C(0.05)	0.24
124600	S12	0-3”	S	BRL <.04	–	0.10	1C(0.09)	0.08	2C(0.05)	0.18
124601	S13	0-3”	S	BRL <.05	–	0.35	2C(0.34)	0.30	2C(0.25)	0.65
124602	S14	0-3”	S	BRL <.05	–	0.47	1C(0.43)	0.32	2C(0.24)	0.79
124603	S15	0-3”	S	BRL <.04	–	0.31	2C(0.30)	0.18	2C(0.12)	0.49
124604	S16	0-3”	S	BRL <.04	–	0.25	2C(0.25)	0.17	2C(0.10)	0.42
124605	S17	0-3”	S	BRL <.49	–	3.2	2C(2.6)	1.5	2C(1.2)	**4.7**
124606	S17	3-6”	S	BRL <.05	–	0.67	2C(0.53)	0.27	2C(0.22)	0.94
124607	S18	0-3”	S	0.38	1C(0.22)	0.35	1C(0.31)	BRL <.05	–	0.73
124608	S19	0-3”	S	0.63	1C(0.33)	0.44	1C(0.42)	BRL <.21	–	**1.1**
124609	S20	0-3”	S	0.18	1C(0.13)	0.24	1C(0.20)	BRL <.04	–	0.42
124610	S21	0-3”	S	0.70	1C(0.53)	0.59	2C(0.52)	BRL <.21	–	**1.3**
124611	S22	0-3”	S	0.93	2C(0.73)	0.38	1C(0.36)	BRL <.21	–	**1.3**

Table C.1 Continued

Sample ID	Map Location	Sample Depth	Sample Type	Aroclor 1248*		Aroclor 1254*		Aroclor 1260*		Total PCB Concentration* (ppm_w)
				Concentration (ppm_w)	Notes	Concentration (ppm_w)	Notes	Concentration (ppm_w)	Notes	
124612	S22	0-3”	D	0.80	2C(0.75)	0.61	1C(0.39)	BRL <.08	–	**1.4**
124614	S23	0-3”	S	1.2	2C(0.77)	0.62	1C(0.46)	BRL <.21	–	**1.8**
124615	S23	0-3”	D	0.62	2C(0.58)	0.52	2C(0.46)	BRL <.21	–	**1.2**
124617	S24	0-3”	S	0.43	1C(0.42)	0.11	1C(0.10)	BRL <.04	–	0.54
124618	S25	0-3”	D	BRL <.04	–	0.42	1C(0.37)	BRL <.04	–	0.42
124620	S25	0-3”	S	BRL <.04	–	0.45	1C(0.33)	BRL <.04	–	0.45
124621	S26	0-3”	S	BRL <.04	–	0.33	1C(0.31)	BRL <.04	–	0.33
124624	S27	0-3”	S	0.12	1C(0.11)	0.21	1C(0.21)	BRL <.04	–	0.33
124627	S28	0-3”	S	BRL <.04	–	0.29	1C(0.25)	0.17	2C(0.10)	0.46
124628	S29	0-3”	S	BRL <.05	–	0.16	2C(0.11)	0.10	2C(0.06)	0.26
124631	S30	0-3”	S	BRL <.05	–	0.12	2C(0.11)	0.08	2C(0.05)	0.20
124634	S31	0-3”	S	BRL <.04	–	0.14	2C(0.11)	BRL <.04	–	0.14
124637	S32	0-3”	S	BRL <.05	–	0.51	2C(0.45)	0.36	2C(0.24)	0.87
124640	S33	0-3”	S	BRL <.41	–	1.5	2C(1.3)	BRL <.41	–	**1.5**
124643	S34	0-3”	S	BRL <.04	–	0.11	2C(0.07)	BRL <.04	–	0.11
124644	S34	3-9”	S	BRL <.04	–	0.06	2C(0.05)	BRL <.04	–	0.06
124645	S35	0-3”	S	BRL <.04	–	0.34	2C(0.22)	BRL <.04	–	0.34
124646	S35	3-9”	S	BRL <.04	–	0.10	2C(0.07)	BRL <.04	–	0.10
124647	S36	0-3”	S	BRL <.24	–	1.3	2C(1.1)	BRL <.24	–	**1.3**
124648	S36	3-9”	S	BRL <.05	–	0.34	2C(0.23)	BRL <.05	–	0.34
124649	S37	0-3”	S	BRL <.04	–	0.30	2C(0.21)	BRL <.04	–	0.30
124650	S37	3-9”	S	BRL <.04	–	BRL <.04	–	BRL <.04	–	0
124651	S38	0-3”	S	BRL <.24	–	1.2	2C(0.99)	BRL <.24	–	**1.2**
124652	S38	3-9”	S	BRL <.24	–	0.51	2C(0.38)	BRL <.24	–	0.51
124653	S39	0-3”	S	BRL <.05	–	0.24	2C(0.19)	0.30	2C(0.19)	0.54
124654	S39	3-9”	S	BRL <.05	–	0.06	2C(0.05)	0.06	2C(0.04)	0.12
124655	S40	0-3”	S	BRL <.05	–	0.14	2C(0.13)	0.10	2C(0.06)	0.24
124346	S41	0-3”	S	0.11	1C(0.08)	0.16	1C(0.13)	BRL <.04	–	0.27
124347	S42	0-3”	S	0.37	1C(0.26)	0.12	2C(0.10)	BRL <.04	–	0.49
124348	S43	0-3”	S	BRL <.04	–	0.16	2C(0.11)	0.14	2C(0.06)	0.30
124349	S44	0-3”	S	0.46	2C(0.39)	0.28	1C(0.22)	BRL <.04	–	0.74
124350	S45	0-3”	S	BRL <.05	–	BRL <.05	–	BRL <.05	–	0

Table C.1 Continued

Sample ID	Map Location	Sample Depth	Sample Type	Aroclor 1248*		Aroclor 1254*		Aroclor 1260*		Total PCB Concentration* (ppm_w)
				Concentration (ppm_w)	Notes	Concentration (ppm_w)	Notes	Concentration (ppm_w)	Notes	
124351	S46	0-3”	S	BRL <.04	–	BRL <.04	–	BRL <.04	–	0
124352	S47	0-3”	S	BRL <.04	–	BRL <.04	–	BRL <.04	–	0
124353	S48	0-3”	S	BRL <.04	–	BRL <.04	–	BRL <.04	–	0
124354	S49	0-3”	S	BRL <.04	–	0.24	2C(0.23)	0.22	2C(0.09)	0.46
124355	S50	0-3”	S	BRL <.04	–	0.09	2C(0.07)	0.07	2C(0.04)	0.15
124356	S51	0-3”	S	BRL <.04	–	0.06	2C(0.05)	0.05	2C(0.04)	0.11
124357	S52	0-3”	S	BRL <.04	–	BRL <.04	–	BRL <.04	–	0
124358	S53	0-3”	S	6.3	2C(4.2)	BRL <1.0	–	BRL <1.0	–	**6.3**
124359	S54	0-3”	S	0.17	1C(0.16)	BRL <.04	–	0.06	2C(0.05)	0.23
124360	S55	0-3”	S	BRL <.04	–	0.10	2C(0.08)	0.11	2C(0.05)	0.21
124361	S56	0-3”	S	BRL <.04	–	0.07	2C(0.06)	0.07	2C(0.04)	0.13
124362	S57	0-3”	S	BRL <.04	–	0.08	2C(0.08)	0.09	2C(0.07)	0.17
124363	S58	0-3”	S	BRL <.04	–	0.11	2C(0.07)	0.08	2C(0.06)	0.19
124364	S59	0-3”	S	BRL <.04	–	0.06	2C(0.05)	0.05	2C(0.04)	0.12
124365	S60	0-3”	S	BRL <.04	–	0.05	2C(0.04)	0.08	2C(0.06)	0.13
124366	S61	0-3”	S	BRL <.04	–	0.07	1C(0.07)	0.11	2C(0.08)	0.18
124367	S62	0-3”	S	BRL <.04	–	0.09	2C(0.06)	0.08	2C(0.05)	0.17
124368	S63	0-3”	S	BRL <.04	–	0.07	2C(0.05)	0.05	2C(0.04)	0.12
124369	S64	0-3”	S	BRL <.04	–	BRL <.04	–	BRL <.04	–	0

ppm_w parts per million by weight
BRL concentration is below reporting limit for analyte

* PCB concentration analysis performed by Groundwater Analytical, Inc., using U.S. Environmental Protection Agency (EPA) Method 8082 (GC/ECD).
** Duplicate pair with greater than 45% variability

1C: Confirmation concentration reported from first column quantification.
2C: Confirmation concentration reported from second column quantification.

Boldface type indicates concentrations greater than the EPA clean-up standard of 1 ppm.

Table C.2 Soil Sample Results for Polychlorinated Biphenyls (PCBs) from Estabrook School, 117 Grove Street, Lexington, Massachusetts, July 13, 2011

Sample ID	Map Location	Sample Depth	Sample Type	Aroclor 1248*		Aroclor 1254*		Total PCB Concentration* (ppm_w)
				Concentration (ppm_w)	Notes	Concentration (ppm_w)	Notes	
125376	SF17	0-3"	S	BRL <0.05	NA	0.14	2C(0.13)	0.14
125377	SF19	0-3"	S	BRL <0.05	NA	0.07	1C(0.06)	0.07
125378	S19B	3-6"	S	BRL <0.05	NA	0.25	1C(0.22)	0.25
125379	SF21	0-3"	S	BRL <0.05	NA	BRL <0.05	NA	BRL <0.05
125380	S21B	3-6"	S	BRL <0.04	NA	0.06	1C(0.06)	0.06
125381	SF22	0-3"	S	BRL <0.05	NA	BRL <0.05	NA	BRL <0.05
125382	SF22	0-3"	D	BRL <0.05	NA	BRL <0.05	NA	BRL <0.05
125383	S22B	3-6"	S	1.0	2C(0.63)	0.43	2C(0.42)	**1.4**
125386	SF23	0-3"	S	BRL <0.05	NA	0.07	1C(0.05)	0.07
125387	S23B	3-6"	S	0.30	2C(0.27)	0.22	1C(0.17)	0.52
125388	SF7	0-3"	S	BRL <0.04	NA	0.10	1C(0.08)	0.10
125389	S7B	3-6"	S	BRL <0.04	NA	0.10	1C(0.08)	0.10
125390	SF33	0-3"	S	BRL <0.47	NA	1.4	2C(1.3)	**1.4**
125391	S33B	3-6"	S	BRL <0.21	NA	0.90	2C(0.85)	0.90
125392	SF53	0-3"	S	BRL <0.04	NA	0.10	1C(0.10)	0.10
125393	S53B	3-6"	S	BRL <0.04	NA	BRL <0.04	NA	BRL <0.04
125396	S53B	3-6"	D	BRL <0.04	NA	BRL <0.04	NA	BRL <0.04
125397	SF36	0-3"	S	BRL <0.05	NA	0.27	1C(0.27)	0.27
125398	SF38	0-3"	S	BRL <0.13	NA	0.43	2C(0.42)	0.43

ppm_w parts per million by weight
BRL concentration is below reporting limit for analyte
NA not applicable

* PCB concentration analysis performed by Groundwater Analytical, Inc., using U.S. Environmental Protection Agency (EPA) Method 8082 (GC/ECD).

1C: Confirmation concentration reported from first column quantification.
2C: Confirmation concentration reported from second column quantification.

Boldface type indicates concentrations greater than the EPA clean-up standard of 1 ppm.

Table C.3 Exterior Concrete and Landscaping Materials Sample Results for Polychlorinated Biphenyls (PCBs) from Estabrook School, 117 Grove Street, Lexington, Massachusetts, July 13, 2011

Sample ID	Description	Aroclor 1254*	
		Concentration (ppm_w)	Notes
125430-C-1-A	Basement window vault outside Room 6, composite concrete, horizontal surface to 1/2" depth	0.08	1C(0.08)
125431-C-1-B	Basement window vault outside Room 6, composite concrete, within 1 foot of building	0.09	1C(0.08)
125432-C-1-C	Basement window vault outside Room 6, composite concrete, within 1 foot of building	0.11	1C(0.09)
125433-C-2-A	Outside Room 6, composite concrete, within 1 foot of building	BRL <0.04	–
125434-C-2-B	Outside Room 6, composite concrete, within 1 foot of building	BRL <0.04	–
125435-C-3-A	Outside Room 5, composite concrete, within 1 foot of building	BRL <0.04	–
125436-C-4-A	Outside Room 20, composite concrete, within 1 foot of building	BRL <0.04	–
125437-C-5-A	Outside Room 20, composite concrete, within 1 foot of building	BRL <0.04	–
125438	Outside Room 20, slate patio and mortar chips	BRL <0.04	–
125132	Outside main connector hall, slate patio and mortar chips	BRL <0.04	–
125133	Outside main connector hall, slate patio and mortar chips	BRL <0.04	–

ppm_w parts per million by weight
BRL concentration is below reporting limit for analyte

* PCB concentration analysis performed by Groundwater Analytical, Inc. (Buzzards Bay, Massachusetts), using U.S. Environmental Protection Agency (EPA) Method 8082 (GC/ECD).

1C: Confirmation concentration reported from first column quantification.

APPENDIX D

METHODS

SAMPLING AND ANALYTICAL METHODS

EH&E conducted a surficial soil sampling program at the Estabrook School from June 13 through June 14, 2011. In accordance with the Soil Sampling Plan (*Estabrook Elementary School, Lexington, Massachusetts, Sampling Plan for the Characterization of Soils Potentially Contaminated With Building-Related Polychlorinated Biphenyls* dated April 15, 2011) and as approved by U.S. Environmental Protection Agency (EPA), the soil sampling programs focused on shallow soils at 0 – 3 inches below ground surface in most locations with some samples obtained at greater depths 3 – 6 or 3 – 9 inches below ground surface. Shallow soils are more likely to be impacted by polychlorinated biphenyls (PCBs) from exterior caulk of the building.

Soil sampling locations were selected based upon the results of the previous testing of caulking by EH&E along the façade of the Estabrook School. These results were reported in September 1, 2010, project update (*Project Update, Estabrook Elementary School, Lexington, Massachusetts* to EPA PCB Coordinator). A grid 10 feet wide was measured along the exterior walls of the school. Within each of the 10 foot grids, soil samples were collected to the selected depth in multiple locations along the drip line of the building. Those discrete sample locations were then composited to provide one sample in each grid for laboratory analysis. Soil samples were collected using hand tools and a log of subsurface conditions to the completion depth was maintained.

On June 13 and June 14, 2011, discrete soil samples for PCB analysis via Soxhlet extraction, were collected from 0 – 3 inches below ground surface at 57 locations and from 3 – 6 or 3 – 9 inches below ground surface at 7 locations (refer to Figure B.1, Appendix B). An additional seven duplicate samples and seven pairs of matrix spike and matrix spike duplicate samples were collected for quality control purposes.

Sampling equipment was decontaminated between each use at each boring location. Decontamination methods used were (in the following order) a Liquinox and distilled water scrub, a distilled water rinse, and air drying. Sampling devices were visually assessed for evidence of potential cross-contamination following cleaning and before each use. Decontamination fluids were collected and containerized to allow proper disposal.

After collection, the soil samples from each depth were homogenized. The soil samples obtained in the field were placed into laboratory prepared glassware and then transported, under chain of custody, to a qualified analytical laboratory (Groundwater Analytical, Buzzards Bay, Massachusetts) for analysis. Samples were analyzed via EPA Method 8082, and in accordance with the Massachusetts Department of Environmental Protection (MADEP) Compendium of Analytical Methods (CAM) requirements.

APPENDIX E

LABORATORY REPORTS

APPENDIX F

TOWN OF LEXINGTON CERTIFICATION LETTER

TOWN OF LEXINGTON

Department of Public Facilities

Patrick W. Goddard
Director of Public Facilities

Tel: (781) 274-8958
Email:pgoddard@lexingtonma.gov

August 5, 2011

Ms. Kimberly N. Tisa
PCB Coordinator
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OSRR07-2
Boston, MA 02114-3912

RE: Written Certification for Document Filing for Remediation of PCB in Soil, Estabrook Elementary School, Lexington, Massachusetts.

Dear Ms. Tisa:

In accordance with §761.61(a)(3)(E), The Town of Lexington (The Town) will maintain a record of filings pertaining to the project involving the removal of PCB-containing soils from the grounds of the Estabrook Elementary School, 117 Grove Street, Lexington, Massachusetts. The information to be kept on file will include; sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess PCB contamination. If alternate methods for chemical extraction and chemical analysis for site characterization are used, an addendum to this certification will be provided to the U.S. Environmental Protection Agency, and shall include a statement that such a method will be used, and that a comparison study which meets or exceeds the requirements of Subpart Q, §761.326, Conducting the comparison study, and for which records are on file, has been completed prior to verification sampling. These filings will be available for EPA inspection and will be kept at the following address below.

Department of Public Facilities
Town of Lexington
201 Bedford Street
Lexington, MA 02420

Sincerely,

Patrick Goddard